

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/27888

| A. CLASSIFICATION OF SUBJECT MATTER | | | | |
|--|---|--|---|---|
| IPC(7) : A61K 35/00, 48/00; C07K 5/00, 14/00; C12N 15/85, 15/86 | | | | |
| US CL : 424/93.1; 435/325; 514/44; 530/300, 350, 399 | | | | |
| According to International Patent Classification (IPC) or to both national classification and IPC | | | | |
| B. FIELDS SEARCHED | | | | |
| Minimum documentation searched (classification system followed by classification symbols) U.S. : 424/93.1; 435/325; 514/44; 530/300, 350, 399 | | | | |
| Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched | | | | |
| Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) Please See Continuation Sheet | | | | |
| C. DOCUMENTS CONSIDERED TO BE RELEVANT | | | | |
| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. | | |
| X | US 5,891,558 A (BELL et al.) 06 April 1999 (06.04.1999), Cols. 4-19. | 1-91 | | |
| X | US 5,855,617 A (ORTON) 05 January 1999 (05.01.1999), Cols. 4-6. | 1-91 | | |
| X | US 5,863,296 A (ORTON) 26 January 1999 (26.01.1999), Cols. 4-7. | 1-91 | | |
| X,P | US 2003/0064927 A1 (GESTRELIUS et al.) 03 April 2003 (03.04.2003), Examples 1-9. | 1-91 | | |
| X,P | US 2003/0166274 A1 (HEWITT et al.) 04 September 2003 (04.09.2003), Examples I-IX. | 1-91 | | |
| X | COOPER, M.L. et al. Use of a compsite skin graft composed of cultured human keratinocytes and fibroblasts and a collagen-GAG matrix to cover full-thickness wounds on athymic mice. Surgery. February 1991, Vol. 109, No. 2, pages 198-207, especially Figures 1 and 4, Table I. | 1-91 | | |
| <input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex. | | | | |
| <table border="0"> <tr> <td> <p>* Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> </td> <td> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&" document member of the same patent family</p> </td> </tr> </table> | | | <p>* Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> | <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&" document member of the same patent family</p> |
| <p>* Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> | <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&" document member of the same patent family</p> | | | |
| Date of the actual completion of the international search | | Date of mailing of the international search report | | |
| 31 October 2003 (31.10.2003) | | 04 DEC 2003 | | |
| Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703)305-3230 | | Authorized officer Christopher Nichols, Ph.D. Telephone No. 703-308-0196 | | |

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C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|---|-----------------------|
| X | LANGDON, R.C. et al. Reconstitution of Structure and Cell Function in Human Skin Grafts Derived from Cryopreserved Allogeneic Dermis and Autologous Cultured Keratinocytes. J Invest Dermatol. November 1988, Vol. 91, No. 5, pages 478-485, especially Figures 1-4. | 1-91 |
| X | SUGIHARA, H. et al. Effects of fat cells on keratinocytes and fibroblasts in a reconstructed rat skin model using collagen gel matrix culture. British Journal of Dermatology. 2001, Vol. 144, pages 244-253, especially Figures 1 and 2. | 1-91 |
| X | KOLODKA, T.M. et al. Evidence for keratinocyte stem cells in vitro: Long term engraftment and persistence of transgene expression from retrovirus-transfected keratinocytes. Proc. Natl. Acad. Sci., USA. April 1998, Vol. 95, pages 4356-4361, especially Table 1 and 2. | 1-91 |
| X | BADIAVAS, E. et al. Retrovirally mediated gene transfer in a skin equivalent model of chronic wounds. Journal of Dermatological Science. 1996, Vol. 13, pages 56-62, especially Figure 3. | 1-91 |
| X | MARUGUCHI, T. et al. A new skin equivalent: Keratinocytes proliferated and differentiated on collagen sponge containing fibroblasts. Plast. Reconstr. Surg. March 1994, Vol. 93, No. 3, pages 537-546, especially Figures 1-4. | 1-91 |
| A,P | US 2002/0169105 A1 (GESTRELIUS et al.) 14 November 2002 (14.11.2002), entire document. | 1-91 |
| A | US 2002/0031500 A1 (MACLAUGHLIN et al.) 14 March 2002 (14.03.2002), entire document. | 1-91 |
| A | KUROYANAGI, Y. et al. A cultured skin substitute composed of fibroblasts and keratinocytes with a collagen matrix: Preliminary results of clinical trials. Ann Plast Surg. October 1993, Vol. 31, No. 4, pages 340-351, entire document. | 1-91 |
| A | DEL RIO, M. et al. A preclinical model for the analysis of genetically modified human skin in vivo. Human Gene Therapy. 20 May 2002, Vol. 13, No. 8, pages 959-968, entire document. | 1-91 |
| A | CURRIE, L.J. et al. The use of fibrin glue in skin grafts and tissue-engineered skin replacements: A Review. Plast Reconstr Surg. November 2001, Vol. 108, No. 6, pages 1713-1726, entire document. | 1-91 |

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Continuation of B. FIELDS SEARCHED Item 3:

WEST (USPT, PGPUBS, JPO, EPO, DERWENT); NCBI (PUBMED); STN (BIOSCIENCE)
fibroblast, keratinocyte, differentiated, differentiation, fibrin, collagen, matrix, allogeneic, epithelial, blood, mitomycin C, X-ray, scaffold, wound dressing, T antigen, EBV, HTLV-1, EBNA2, glycerol, c-myc, c-kun. myc, n-myc